



## Installation and Operation Manual

# **Selenio 6800™** **DMX6800+AB/C Series** **Analog and Digital Audio** **Demultiplexers**

**Edition C**

**175-000196-00**

**Delivering the Moment**

[imaginecommunications.com](http://imaginecommunications.com)

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- eCustomer Portal: <http://support.imaginecommunications.com>

**DMX6800+ A4B2**  
**DMX6800+ A4B2Z**  
**DMX6800+ A4C2**  
**DMX6800+ A4C2Z**

**Analog and Digital Audio  
Demultiplexers**

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**Installation and Operation Manual**



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# Preface

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## Manual Information

### Purpose

This manual details the features, installation, operation, maintenance, and specifications for the DMX6800+ AB/C Series modules.

### Audience

This manual is written for engineers, technicians, and operators responsible for installation, setup, maintenance, and/or operation of the DMX6800+ AB/C Series modules.

## Revision History

**Table ii-1.** Revision History

<b>Edition</b>	<b>Date</b>	<b>Revision History</b>
A	February 2004	Initial release
B	March 2004	Updated material: <ul style="list-style-type: none"><li>• Maximum power ratings for 6800+ frames</li><li>• Addition of Standards and Performance information to the specifications</li><li>• Corrected Performance specification table</li></ul>
	May 2004	
C	November 2006	Updated material: <ul style="list-style-type: none"><li>• Addition of information on the Analog Audio Output Level Offset parameter</li><li>• Maximum power ratings for 6800+ frames</li><li>• Addition of addendum and errata information from previous edition of the manual</li></ul>

## Writing Conventions

To enhance your understanding, the authors of this manual have adhered to the following text conventions:

**Table P-3.** Writing Conventions

Term or Convention	Description
<b>Bold</b>	Indicates dialog boxes, property sheets, fields, buttons, check boxes, list boxes, combo boxes, menus, submenus, windows, lists, and selection names
<i>Italics</i>	Indicates E-mail addresses, the names of books or publications, and the first instances of new terms and specialized words that need emphasis
<b>CAPS</b>	Indicates a specific key on the keyboard, such as ENTER, TAB, CTRL, ALT, or DELETE
<b>Code</b>	Indicates variables or command-line entries, such as a DOS entry or something you type into a field
>	Indicates the direction of navigation through a hierarchy of menus and windows
<a href="#">hyperlink</a>	Indicates a jump to another location within the electronic document or elsewhere
<a href="#">Internet address</a>	Indicates a jump to a Web site or URL
 <b>Note</b>	Indicates important information that helps to avoid and troubleshoot problems

## Obtaining Documents

Product support documents can be viewed or downloaded from our Web site at [www.broadcast.harris.com/leitch](http://www.broadcast.harris.com/leitch) (go to **Support>Documentation**). Alternatively, contact your Customer Service representative to request a document.

# Unpacking/Shipping Information

## Unpacking a Product

This product was carefully inspected, tested, and calibrated before shipment to ensure years of stable and trouble-free service.

1. Check equipment for any visible damage that may have occurred during transit.
2. Confirm that you have received all items listed on the packing list.
3. Contact your dealer if any item on the packing list is missing.
4. Contact the carrier if any item is damaged.
5. Remove all packaging material from the product and its associated components before you install the unit.

Keep at least one set of original packaging, in the event that you need to return a product for servicing.

## Product Servicing

Except for firmware upgrades, DMX6800+ AB/C Series modules are not designed for field servicing. All hardware upgrades, modifications, or repairs require you to return the modules to the Customer Service center.

## Returning a Product

In the unlikely event that your product fails to operate properly, please contact Customer Service to obtain a Return Authorization (RA) number, then send the unit back for servicing.

Keep at least one set of original packaging in the event that a product needs to be returned for service. If the original package is not available, you can supply your own packaging as long as it meets the following criteria:

- The packaging must be able to withstand the product's weight.
- The product must be held rigid within the packaging.
- There must be at least 2 in. (5 cm) of space between the product and the container.
- The corners of the product must be protected.

Ship products back to us for servicing prepaid and, if possible, in the original packaging material. If the product is still within the warranty period, we will return the product prepaid after servicing.

## Restriction on Hazardous Substances (RoHS) Compliance

Directive 2002/95/EC—commonly known as the European Union (EU) Restriction on Hazardous Substances (RoHS)—sets limits on the use of certain substances found in electrical and electronic equipment. The intent of this legislation is to reduce the amount of hazardous chemicals that may leach out of landfill sites or otherwise contaminate the environment during end-of-life recycling. The Directive took effect on July 1, 2006, and it refers to the following hazardous substances:

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent Chromium (Cr-VI)
- Polybrominated Biphenyls (PBB)
- Polybrominated Diphenyl Ethers (PBDE)

According to this EU Directive, all products sold in the European Union will be fully RoHS-compliant and “lead-free.” (See our Web site, [www.broadcast.harris.com/leitch](http://www.broadcast.harris.com/leitch), for more information on dates and deadlines for compliance.) Spare parts supplied for the repair and upgrade of equipment sold before July 1, 2006 are exempt from the legislation. Equipment that complies with the EU directive will be marked with a RoHS-compliant emblem, as shown in Figure P-1.

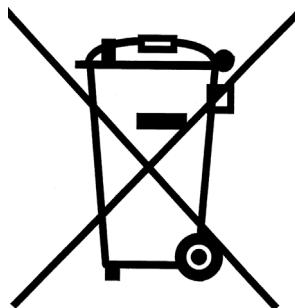


**Figure P-1.** RoHS Compliance Emblem

# Waste from Electrical and Electronic Equipment (WEEE) Compliance

The European Union (EU) Directive 2002/96/EC on Waste from Electrical and Electronic Equipment (WEEE) deals with the collection, treatment, recovery, and recycling of electrical and electronic waste products. The objective of the WEEE Directive is to assign the responsibility for the disposal of associated hazardous waste to either the producers or users of these products. Effective August 13, 2005, producers or users will be required to recycle electrical and electronic equipment at end of its useful life, and may not dispose of the equipment in landfills or by using other unapproved methods. (Some EU member states may have different deadlines.)

In accordance with this EU Directive, companies selling electric or electronic devices in the EU will affix labels indicating that such products must be properly recycled. (See our Web site, [www.broadcast.harris.com/leitch](http://www.broadcast.harris.com/leitch), for more information on dates and deadlines for compliance.) Contact your local sales representative for information on returning these products for recycling. Equipment that complies with the EU directive will be marked with a WEEE-compliant emblem, as shown in Figure P-2.



**Figure P-2.** WEEE Compliance Emblem

# Safety

Carefully review all safety precautions to avoid injury and prevent damage to this product or any products connected to it. If this product is rack-mountable, it should be mounted in an appropriate rack using the rack-mounting positions and rear support guides provided. It is recommended that each frame be connected to a separate electrical circuit for protection against circuit overloading. If this product relies on forced air cooling, it is recommended that all obstructions to the air flow be removed prior to mounting the frame in the rack.

If this product has a provision for external earth grounding, it is recommended that the frame be grounded to earth via the protective earth ground on the rear panel.

**IMPORTANT!** Only qualified personnel should perform service procedures.

## Safety Terms and Symbols in this Manual



### **WARNING**

**Statements identifying conditions or practices that may result in personal injury or loss of life. High voltage is present.**



### **CAUTION**

**Statements identifying conditions or practices that can result in damage to the equipment or other property.**



## Chapter 1

# Introduction

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## Overview

The DMX6800+ AB/C Series of modules described in this manual consist of the following:

- DMX6800+ A4B2 and DMX6800+ A4B2Z, which support four analog outputs with two balanced AES outputs
- DMX6800+ A4C2 and DMX6800+ A4C2Z, which support four analog outputs with two unbalanced AES outputs

These units all provide an SD video input and one SD reclocked video output and are made for use in the FR6802+ frame.

The following topics are described in this chapter:

- [“Product Description” on page 2](#)
- [“Main Features” on page 3](#)
- [“Module Descriptions” on page 4](#)
- [“Back Connectors” on page 6](#)
- [“Signal Flow” on page 8](#)

*See the Pilot or +Pilot Lite Manuals and Online Help for information on how to configure the CCS software application to communicate with the DMX6800+ AB/C Series of Audio Demultiplexer modules.*

---

# Product Description

The DMX6800+ AB/C Series of Audio Demultiplexer modules are analog and AES demultiplexers that provide up to four analog audio outputs and up to two balanced or unbalanced AES outputs. They also provide an SD video input and one SD video reclocked output.

The DMX6800+ AB/C Series of Audio Demultiplexer modules can be set up, controlled, and monitored either locally via the card-edge switches or remotely on a PC. [Table 1-1](#) describes the individual modules.

**Table 1-1.** DMX6800+ AB/C Series Audio Demultiplexer Descriptions

Module	Description
DMX6800+ A4B2	An audio demultiplexer with four 66Ω analog outputs and two balanced AES outputs
DMX6800+ A4C2	An audio demultiplexer with four 66Ω analog outputs and two unbalanced AES outputs
DMX6800+ A4B2Z	An audio demultiplexer with four 600Ω impedance analog outputs and two balanced AES outputs
DMX6800+ A4C2Z	An audio demultiplexer with four 600Ω impedance analog outputs and two unbalanced AES outputs

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# Main Features

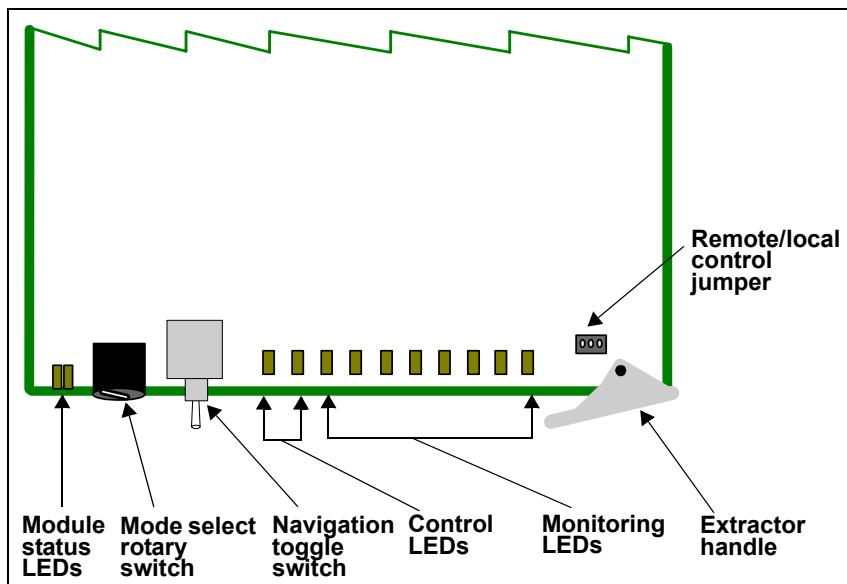
The DMX6800+ AB/C Series of Audio Demultiplexer modules feature the following:

- SD video input with auto-detect
- One SD video reclocked output
- Four analog audio output channels (66Ω or 600Ω)
- Two AES output channels that are balanced (DMX6800+ A4B2 and DMX6800+ A4B2Z) or unbalanced (DMX6800+ A4C2 DMX6800+ A4C2Z)
- Internal audio processing amplifier
- Selectable 16-bit, 20-bit, or 24-bit audio processing
- C-bit, U-bit, and V-bit transparency
- Input video status
- Adjustable audio delay, up to 1.3 seconds
- Customer selectable on/off mute function for audio errors
- Adjustable gain, invert, and channel swapping
- Ability to demux any channel within 4 groups
- Adjustable analog audio output level offset (that compliments the analog audio output level jumpers)
- Card-edge control
- Integrated remote PC-based control capability (using CCS Pilot or CCS Pilot Lite)
- Third-party product control through public API

# Module Descriptions

## Front Module

[Figure 1-1](#) is a generic top-front view of a typical 6800+ module and shows the general location of standard LEDs, controls, and jumpers.



**Figure 1-1.** Typical 6800+ Module

[Table 1-2 on page 5](#) briefly describes generic 6800+ LEDs, switches, and jumpers. See “Chapter 3: Operation” for more information on specific DMX6800+ AB/C Series module controls, LEDs, and jumpers.

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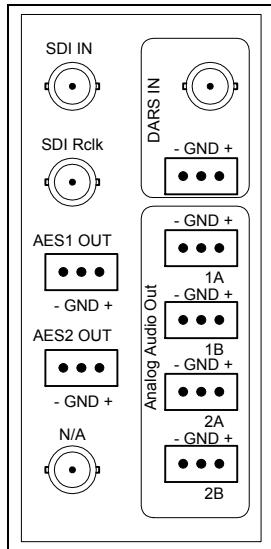
**Table 1-2.** Generic 6800+ Module Features

Feature	Description
Module status LEDs	Various color and lighting combinations of these LEDs indicate the module state. <i>See “Monitoring LEDs” in Chapter 3 for more information.</i>
Mode select rotary switch	This switch selects between various control and feedback parameters.
Navigation toggle switch	This switch navigates up and down through the available control parameters: <ul style="list-style-type: none"><li>• <b>Down:</b> Moves down through the parameters</li><li>• <b>Up:</b> Moves up through the parameters</li></ul>
Control LEDs	Various lighting combinations of these Control LEDs (sometimes referred to as “Bank Select LEDs”) indicate the currently selected bank. <i>See Table 3-1 “Selected Bank as Indicated by Control LEDs” for more information.</i>
Monitoring LEDs	Each 6800+ module has a number of LEDs assigned to indicate varying states/functions. <i>See “Monitoring LEDs” in Chapter 3 for a description of these LEDs.</i>
Local/remote control jumper	<ul style="list-style-type: none"><li>• <b>Local:</b> Locks out external control panels and allows card-edge control only; limits the functionality of remote software applications to monitoring</li><li>• <b>Remote:</b> Allows remote or local (card-edge) configuration, operation, and monitoring of the DMX6800+ AB/C Series</li></ul>

# Back Connectors

## Balanced Back Module

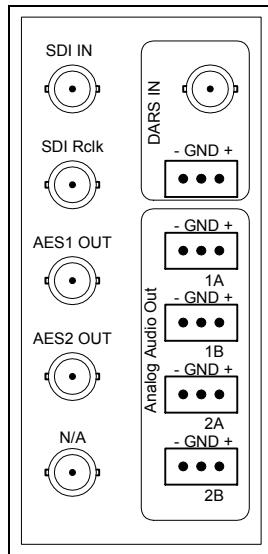
[Figure 1-2](#) shows the back connections for the DMX6800+ A4B2 and DMX6800+ A4B2Z back modules.



**Figure 1-2.** Back Module for Balanced AES Output

## Unbalanced Back Module

Figure 1-3 shows the back connections for the DMX6800+ A4C2 and DMX6800+ A4C2Z back modules.



**Figure 1-3.** Back Module for Unbalanced AES Output

# Signal Flow

Figure 1-4 shows the basic signal flow of the DMX6800+ AB/C Series of Audio Demultiplexers.

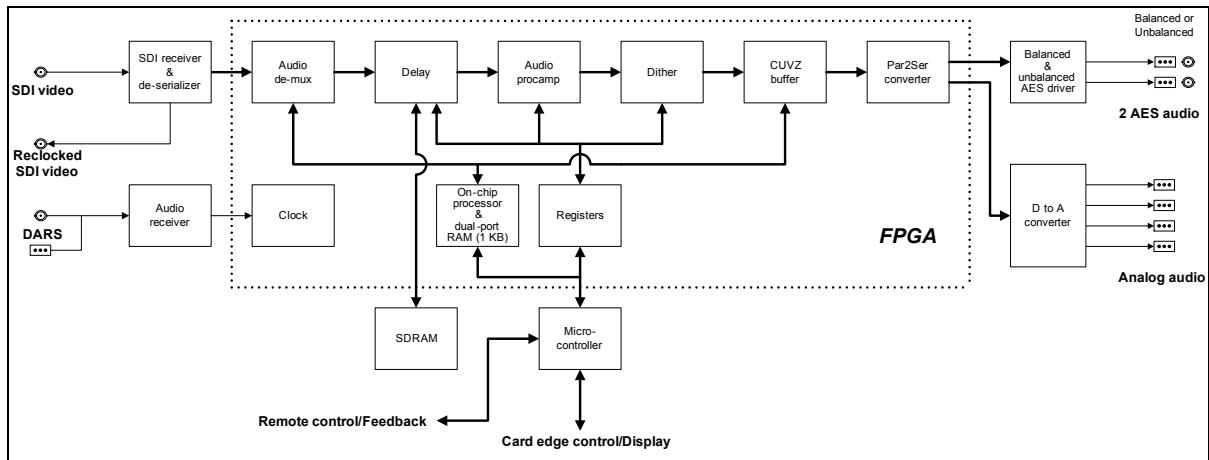


Figure 1-4. Signal Flow DMX6800+ AB/C Series Modules

## Chapter 2

# Installation

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## Overview



### Caution

Before installing this product, read the 6800+ Series Safety Instructions and Standards manual shipped with every *FR6802+ Frame Installation and Operation Manual* or downloadable from our Web site at [www.broadcast.harris.com/leitch](http://www.broadcast.harris.com/leitch). This safety manual contains important information about the safe installation and operation of 6800+ series products.

Before installing this product, see “Maximum 6800+ Frame Power Ratings” on page 10.

This chapter describes the DMX6800+ AB/C Series installation process, including the following topics:

- “Maximum 6800+ Frame Power Ratings” on page 10
- “Unpacking the Module” on page 11
- “Setting Jumpers” on page 13
- “Installing DMX6800+ AB/C Series Modules” on page 17
- “Upgrading Module Firmware” on page 18

See the *FR6802+ Frame Installation and Operation Manual* for information about installing and operating an FR6802+ frame and its components.

See the *6800 Series Frames and Power Supply Installation and Operation Manual* for information about installing and operating a 6800/7000 series frame.

---

# Maximum 6800+ Frame Power Ratings

The DMX6800+ A4B2Z and DMX6800+ A4C2Z modules are limited in loading only when housed in frames that use a 48V DC power supply. When placing DMX6800+ A4B2Z and DMX6800+ A4C2Z modules in a DC-powered frame, you can have a maximum of eight modules in the frame at one time.

Table 2-1 describes the maximum allowable power ratings for 6800+ frames.

**Table 2-1. Maximum Power Ratings for 6800+ Frames**

<b>6800+ Frame Type</b>	<b>Max. Frame Power Dissipation</b>	<b>Number of Usable Slots</b>	<b>Max. Power Dissipation Per Slot</b>
FR6802+XF (frame with AC power supply)	120 W	20	6 W
FR6802+XF48 (frame with DC power supply)	105 W	20	5.25 W

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# Unpacking the Module

## Preparing the Product for Installation

Before you install a DMX6800+ AB/C Series module, perform the following:



### Note

Contact your Customer Service representative if parts are missing or damaged.

- Check the equipment for any visible damage that may have occurred during transit.
- Confirm receipt of all items on the packing list. See “[Checking the Packing List](#)” for more information.
- Remove the anti-static shipping pouch, if present, and all other packaging material.
- Retain the original packaging materials for possible re-use.

See “Unpacking/Shipping Information” on page v for information about returning a product for servicing.

## Checking the Packing List

**Table 2-2. Available Product Packages**

Ordered Product	Content Description
DMX6800+ A4B2D	<ul style="list-style-type: none"><li>• One DMX6800+ A4B2 module</li><li>• One back module for balanced AES output</li><li>• One <i>DMX6800+ AB/C Series Audio Demultiplexers Installation and Operation Manual</i></li></ul>

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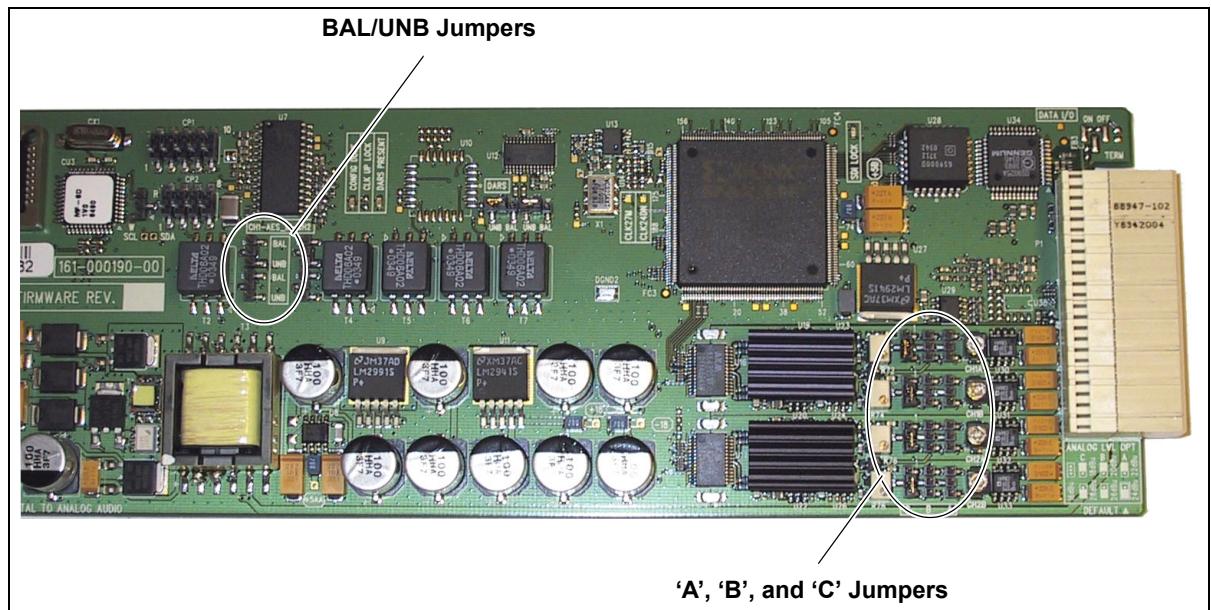
**Table 2-2. Available Product Packages (Continued)**

<b>Ordered Product</b>	<b>Content Description</b>
DMX6800+ A4B2ZD	<ul style="list-style-type: none"><li>• One DMX6800+ A4B2Z module</li><li>• One back module for balanced AES output</li><li>• One <i>DMX6800+ AB/C Series Audio Demultiplexers Installation and Operation Manual</i></li></ul>
DMX6800+ A4C2D	<ul style="list-style-type: none"><li>• One DMX6800+ A4C2 module</li><li>• One back module for unbalanced AES output</li><li>• One <i>DMX6800+ AB/C Series Audio Demultiplexers Installation and Operation Manual</i></li></ul>
DMX6800+ A4C2ZD	<ul style="list-style-type: none"><li>• One DMX6800+ A4C2Z module</li><li>• One back module for unbalanced AES output</li><li>• One <i>DMX6800+ AB/C Series Audio Demultiplexers Installation and Operation Manual</i></li></ul>

# Setting Jumpers

The DMX6800+AB/C series modules have two jumpers that you need to set.

- ‘A’, ‘B’, and ‘C’: Analog level options
- **BAL/UNB:** Balanced/Unbalanced DARS input



**Figure 2-1.** Locations of the Jumpers on a Typical DMX6800+ AB/C Series Module

# Setting Jumpers ‘A’, ‘B’ and ‘C’ for Analog Level Options

Follow this procedure to set the analog level for the DMX6800+ AB/C Series modules:

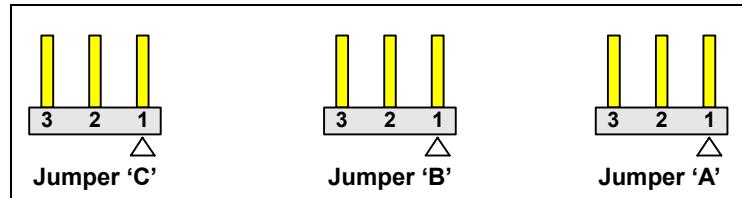
## Note

For additional analog audio output level settings, see “[Using the Analog Audio Output Level Offset](#)” on page 26.

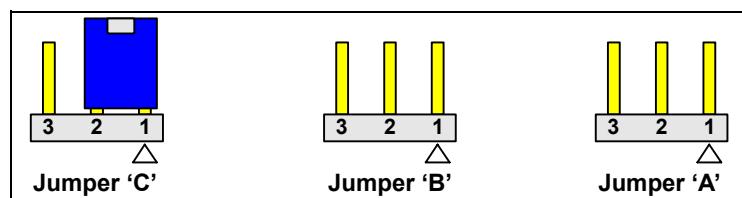
1. Locate jumpers ‘A’, ‘B’ and ‘C’ on the module.
2. Place jumpers on the pins according to [Table 2-3 on page 14](#).

**Table 2-3.** Analog Level Jumper Pin Settings

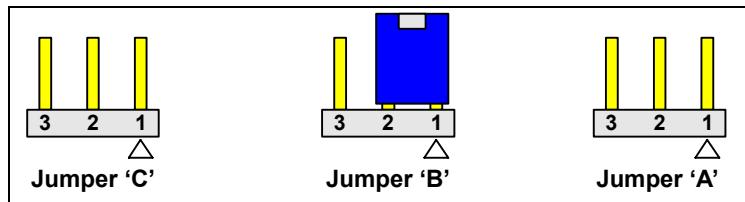
Analog Level	Jumper Setting
16 dBu (10 dBm)	No jumpers on pins (See <a href="#">Figure 2-2</a> .)
18 dBu (12 dBm)	Jumper on pins 1 and 2 of ‘C’ (See <a href="#">Figure 2-3</a> .)
20 dBu (14 dBm)	Jumper on pins 1 and 2 of ‘B’ (See <a href="#">Figure 2-4</a> .)
22 dBu (16 dBm)	Jumper on pins 1 and 2 of ‘A’ (See <a href="#">Figure 2-5</a> .)
24 dBu (18 dBm)	Jumper on pins 2 and 3 of ‘A’ (See <a href="#">Figure 2-6</a> .)
26 dBu (20 dBm)	Jumper on pins 2 and 3 of ‘B’ (See <a href="#">Figure 2-7</a> .)
28 dBu (22 dBm)	Jumper on pins 2 and 3 of ‘C’ (See <a href="#">Figure 2-8</a> .)



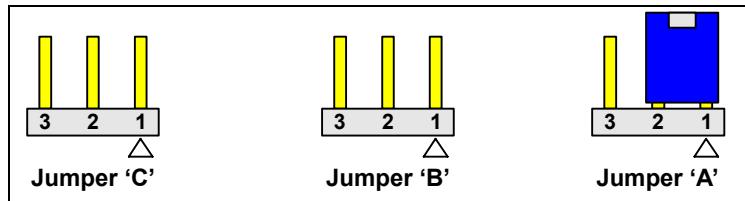
**Figure 2-2.** Jumper Settings for 16 dBu (10 dBm)



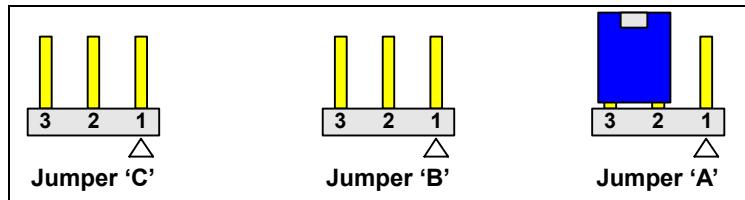
**Figure 2-3.** Jumper Settings for 18 dBu (12 dBm)



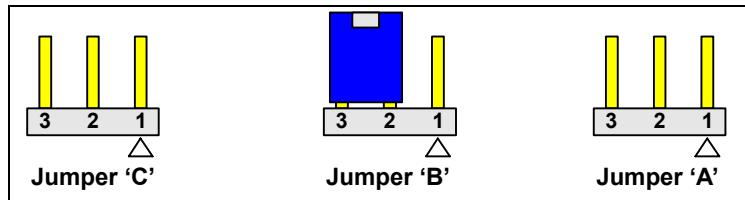
**Figure 2-4.** Jumper Settings for 20 dBu (14 dBm)



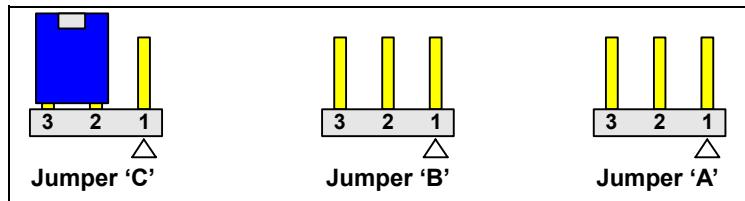
**Figure 2-5.** Jumper Settings for 22 dBu (16 dBm)



**Figure 2-6.** Jumper Settings for 24 dBu (18 dBm)—Default



**Figure 2-7.** Jumper Settings for 26 dBu (20 dBm)



**Figure 2-8.** Jumper Settings for 28 dBu (22 dBm)

# Setting the BAL/UNB Jumpers for Balanced/Unbalanced DARS Input

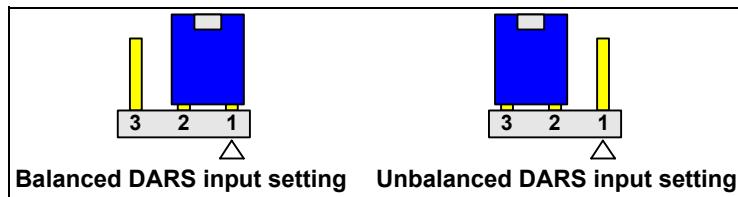
Follow this procedure to set the **BAL/UNB** jumpers for either a balanced or unbalanced DARS input on the DMX6800+ AB/C Series modules.

1. Locate the jumpers **BAL/UNB** on the module.

*See Figure 2-1 on page 13* for the location of the **BAL/UNB** jumpers.

2. Place a jumpers on pins 1 and 2 to set the module to **Balanced** DARS input, or pins 2 and 3 to set the module to **Unbalanced** DARS input (See [Figure 2-9](#)).

Do this for both jumpers. Both jumpers must be set identically to correctly change the signal path.



## Note

The white triangle near the jumper pins on the module indicates pin 1.

**Figure 2-9.** BAL/UNB Jumper Settings for Balanced and Unbalanced DARS Inputs

---

# Installing DMX6800+ AB/C Series Modules

The DMX6800+ AB/C Series modules have double-width back connectors that must be installed in an FR6802+XF frame.

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## **Caution**

Before installing your modules, see [Table 2-1 "Maximum Power Ratings for 6800+ Frames"](#) on [page 10](#).

---

These modules require no specialized installation or removal procedures. However, if you are installing both front and rear modules, ensure that the back module is installed first before plugging in the front module. Likewise, ensure that the front module is unplugged from the frame before removing the rear module. See the *FR6802+ Frames Installation and Operation Manual* for information about installing and operating an FR6802+ frame and its components.

# Upgrading Module Firmware

## Note

Firmware for the MXA6800+ and MSA6800+ must be updated in Boot Loader mode.

Firmware upgrading is a routine procedure that you must perform to install newer versions of software on 6800+ modules. Pilot, Co-Pilot, or Navigator software version 3.1.1 or later is required for this procedure. The frame must contain or be connected to another frame that contains an ICE6800+ module.

When performing the upgrading procedure, check the appropriate readme file to confirm which files are needed. Use care to ensure that you upload the correct files to the intended module.

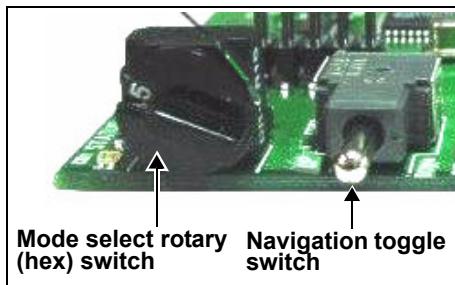
In the unlikely event that the upgrade fails, the module may not respond to controls and will appear to be non-functional. In that event, follow the procedures described in [“Correcting a Failed Upgrade Procedure” on page 22](#).

## Upgrading the Firmware in Boot Loader Mode

### Upgrading the Firmware Using the Discovery Method

Follow these steps to upgrade a module’s firmware:

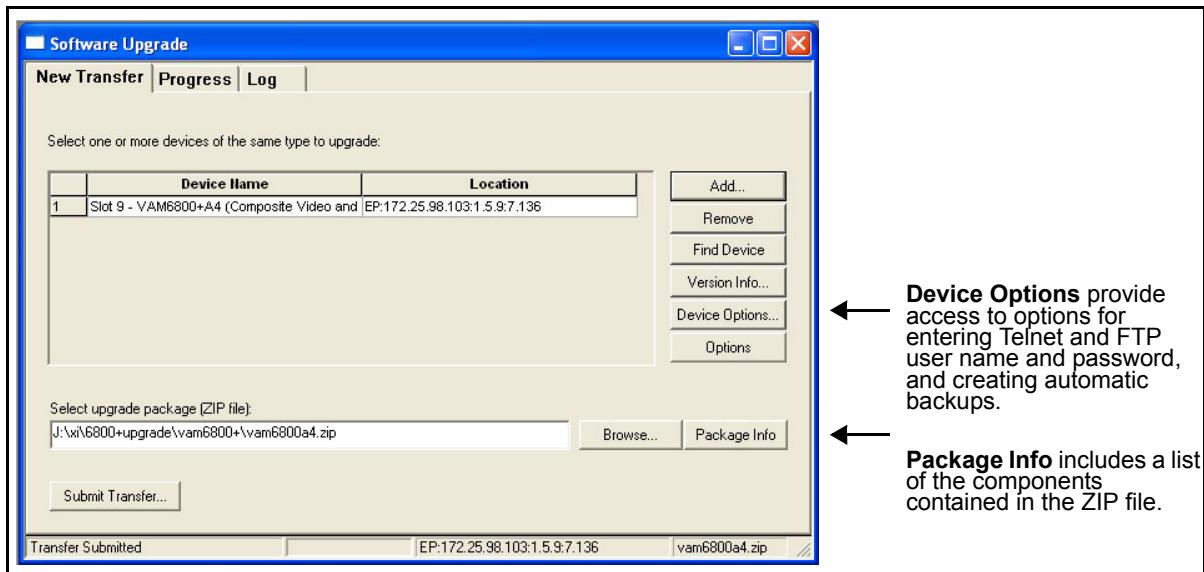
1. Download the most recent appropriate upgrade package from the our Web site or from your CD-ROM.
2. Remove the module from the 6800+ frame.



**Figure 2-10.** Buttons on a Typical Card Edge

3. Set the hex switch to F.
4. While pressing the Navigation toggle switch down, reinsert the module into the frame and then release the Navigation toggle switch.

5. Perform a Discovery operation to discover the module, as described in your CCS software application manual or online help. (If you cannot discover the device using the Discovery tool, see “[Upgrading Firmware Using the Drag-and-Drop Method](#)” on [page 20](#).)
6. From CoPilot, Pilot, or Navigator’s **Tools** menu, select **Software Upgrade**.  
The **Software Upgrade** window opens or is brought to the foreground.



**Figure 2-11.** Software Upgrade Tool’s New Transfer Tab

7. On the **New Transfer** tab, click **Add**.  
The **Device Selection** dialog opens.
8. Select one or more devices, and then click **OK** to close the **Add Device** dialog box.  
You can only add one unit from each IP address. All items in a frame have the same IP address.  
The selected devices appear in the table on the **New Transfer** tab of the **Software Upgrade** window. This table lists devices that are to receive the same upgrade package.

---

For each device in this table, you can highlight its position in the **Tree View** by clicking **Find Device**. You can check the software revision numbers, etc., by clicking **Version Info**, and create an automatic backup by clicking the **Device Options...** button. (Place a check beside **Software Backup** and enter a file name or click **Browse** to choose a new file location.)

9. Press **Browse...** to select the software upgrade package (ZIP file).

A standard **Windows File Selection** dialog opens.

10. Choose the upgrade ZIP file on a local or network drive.

The selected file's path name is displayed in the edit box to the left of the **Browse...** button.

The extraction process on the ZIP file is handled as part of the upgrade process. You do not need to extract the files yourself.

11. Press **Submit Transfer...**

A dialog box opens, requesting confirmation that you want to proceed with the request. If you have multiple devices selected, multiple transfer tasks are submitted—one per device.

The transfer now progresses. You may close the **Software Upgrade** window, continue with other tasks, or switch to the **Progress** tab to view the status of the transfers.

12. Click on the **Log** tab and look at the **Progress** column to ensure that all files have correctly updated.

13. When the update is complete, reboot the module by manually pulling it out and then pushing it back into its slot in the frame.

You cannot click **Reboot Device** to reboot 6800+ modules that must be upgraded in Boot Loader mode.

Your upgrade procedure is complete.

If for some reason the upgrade fails, the module may not respond to controls and will appear to be non-functional. In that event, follow the procedures described in “[Correcting a Failed Upgrade Procedure](#)” on [page 22](#).

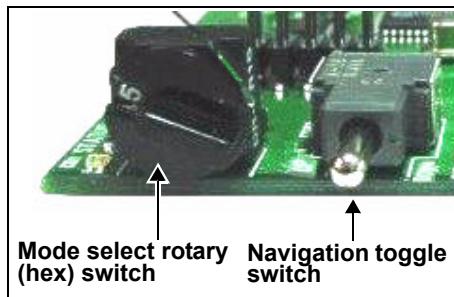
## Upgrading Firmware Using the Drag-and-Drop Method

Follow these steps to upgrade the firmware using the drag-and-drop method:

1. Download the most recent appropriate upgrade package from the our Web site or from your CD-ROM.

---

2. Remove the module from the 6800+ frame.



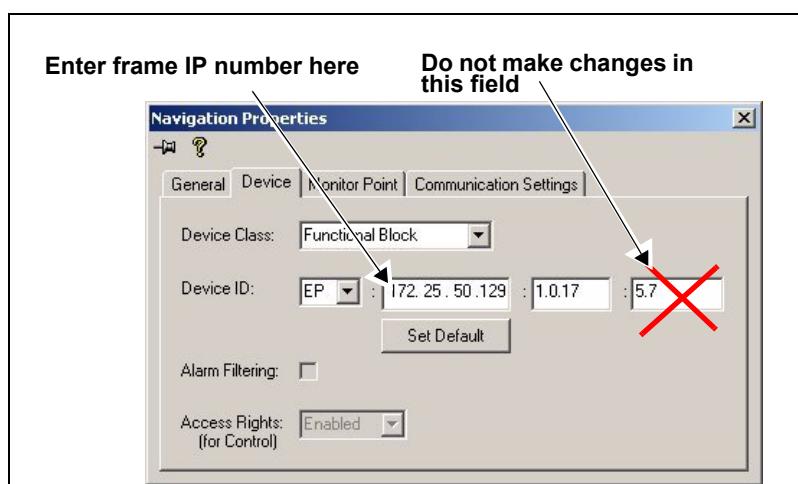
**Figure 2-12.** Buttons on a Typical Card Edge

3. Set the hex switch to F.
4. While pressing the Navigation toggle switch down, reinsert the module into the frame and then release the Navigation toggle switch.
5. If the affected module has not been discovered by your CCS software application, enter Build mode, and then drag or copy and paste the module's device icon from the catalog folder into the **Network or Discovery** folder.
6. Right-click the device icon, and then select **Properties**.
7. On the **Device** tab of the **Navigation Properties** box, enter the IP address of the frame that holds the module. (See [Figure 2-13](#).)



## Caution

Do not make changes in the last field (located above and to the right of the **Set Default** button.) Making changes to this field could cause loss of communication between the module and your CCS software. If communication is lost, you will need to rediscover the module.



**Figure 2-13.** Navigation Properties Box

8. In the third field, enter the slot number of the module, and then close the window.

You can now continue upgrading your device's firmware, starting with step 3 in [“Upgrading the Firmware in Boot Loader Mode” on page 18](#).

## Correcting a Failed Upgrade Procedure

Firmware upgrades may fail in the event of network interruptions, power failures, or if files were sent to the wrong 6800+ module.

These problems can be corrected by re-installing the firmware using the **File Transfer** tab of the **Configuration** window, as described below. When you are performing this procedure, check the appropriate readme file to confirm which files are needed. Use care to ensure that you upload the correct files to the intended module.

Follow these steps to correct a failed upgrade procedure:

### Note

To successfully upgrade the firmware, you must follow these steps in the exact sequence described.



### Caution

Do not make changes in the last field (located above and to the right of the **Set Default** button.) Making changes to this field could cause loss of communication between the module and your CCS software. If communication is lost, you will need to rediscover the module.

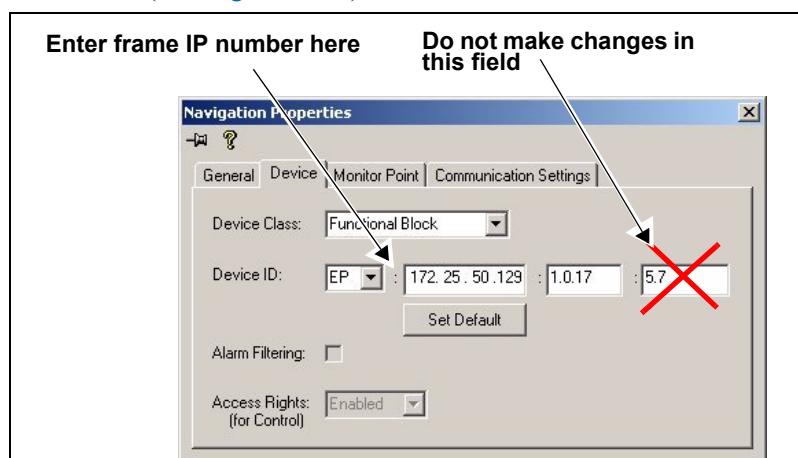


Figure 2-14. Navigation Properties Box

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5. In the third field of the **Device ID**, enter  
1.0.[slotnumber]  
(Where, for example, 1.0.5 would refer to the module in slot 5 of the frame.)
6. Close the window.
7. Double-click the device icon for the affected module.

The **Configuration...** box opens. On the **File Transfer** tab, the /frame[slotx (where x is the slot number) directory appears in the **Select the device directory to transfer to:** field.

8. Click **Add**.
9. In the **Add Upgrade Files** box, browse, select the module's upgrade package, and then click **OK**.
10. On the **File Transfer** tab, choose the file you wish to upgrade, and then click **OK**.
11. Click **Perform Transfer**, and then click **Yes**.

This may take several minutes.

12. When the message **File transfer to device succeeded** appears in the status bar, reboot the module by manually pulling it out and then pushing it back into its slot in the frame.

You cannot click **Reboot Device** to reboot 6800+ modules that must be upgraded in Boot Loader mode.

Your upgrade procedure is complete.

---



## Note

You must delete unwanted files in the **Add upgrade files for transfer to device:** field before transferring the files. Otherwise, the upgrading procedure will fail.

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## Chapter 3

# Operation

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## Overview

This chapter describes how to operate a DMX6800+ AB/C Series Audio Demultiplexer module using card-edge controls only. *See the following Leitch documents for information on how to operate this product remotely:*

- **•**Pilot Lite User Manual for serial control interface
- CCST<sup>TM</sup> Navigator<sup>TM</sup>, Pilot<sup>TM</sup>, CoPilot<sup>TM</sup>, NUCLEUS Network Control Panel or RCP-CCS-1U Remote Control Panel Manual for Ethernet control interface

The following topics are discussed in this chapter:

- [“Changing Parameter Settings” on page 27](#)
- [“Setting DMX6800+ AB/C Series Control Parameters” on page 29](#)
- [“Cross-Functional Parameter Changes” on page 37](#)
- [“LEDs and Alarms” on page 38](#)

## Operating Notes

When setting the control parameters on a DMX6800+ AB/C Series module, observe the following:

- When you change a parameter, the effect is immediate. However, the module requires up to 20 seconds to save the latest change. After 20 seconds, the new settings are saved and will be restored if the module loses power and must be restarted.

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- When you turn the rotary hex switches to select between channels or groups, the LED indicators change to reflect the channel or group that is currently selected. If you do not make a change to your selection within five seconds, the LEDs will revert to their normal display mode. If you then turn the rotary hex switches to change your channel or group selection, the LEDs will temporarily change to reflect the selections that you are making
- If you make changes to certain parameters, other related parameters may also be affected. *See “Changing Parameter Settings” for more information on these cross-functional parameter changes.*

## Using the Analog Audio Output Level Offset

Using the **OP Level Offset** parameter you can amplify all analog audio outputs simultaneously. This allows you to set analog audio output levels beyond what can be achieved using the analog level jumpers (see [“Setting Jumpers ‘A’, ‘B’ and ‘C’ for Analog Level Options” on page 14](#)). This output level adjustment is achieved by the **OP Level Offset** parameter, which has a range of -5.0 to 0 dB in 0.5 dB steps.

For example, to set an analog output level of +15 dBu for a digital input audio level of 0 dBFS, you can use a combination of analog audio level jumper settings and adjustment of the **OP Level Offset** parameter. The following steps sets the analog audio level output to +15 dBu.

1. Set jumpers **A**, **B**, and **C** to set the analog audio output level to +16 dBu ([“Setting Jumpers ‘A’, ‘B’ and ‘C’ for Analog Level Options” on page 14](#)).

For this setting, refer to [Table 2-3 on page 14](#).

2. Adjust the **OP Level Offset** parameter to -1.0 dB. Use either a remote control application (e.g. **•PilotLite**, Pilot or Navigator) or card-edge control to adjust the parameter to this setting.

The combination of these two settings will set the audio output level to +15 dBu for a digital input audio level of 0 dBFS.

# Changing Parameter Settings

Follow these steps to change the DMX6800+ AB/C Series parameter settings:

1. Rotate the mode select rotary switch (hex switch) to “0.”
2. Once the hex switch is set to “0,” toggle the navigation switch up or down to select a bank.

View the two control LEDs next to the navigation toggle switch to see which bank is currently selected.

**Table 3-1.** Selected Bank as Indicated by Control LEDs

Bank Mark LED 0	Bank Mark LED 1	Bank Number
Off	Off	0
On	Off	1
Off	On	2

See Table 3-2 “Card-Edge Parameter Options” to view the various banks, hex switch positions, and corresponding parameter options and values.

3. Rotate the hex switch to the parameter number (1 to 9) or letter (A to F) of the option you want to set.
4. Toggle the navigation switch to select and set the value of the chosen parameter.
5. Rotate the hex switch to another parameter number/letter in the current bank, and then repeat step 4.  
or  
Rotate the hex switch to “0” again to select a different bank, and then repeat steps 3 and 4.

## **Note**

Leitch recommends that you use the available 6800+ software control options (serial/local or Ethernet/remote) to aid in viewing, setting, and confirming parameter values.

# Recalling Default Parameter Settings

[Table 3-2 "DMX6800+ AB/C Series Card-Edge Parameter Options"](#) describes all of the parameter settings for DMX6800+ AB/C Series modules, including the original factory defaults. To return this module to its default settings, you can either reset each parameter individually or do a global recall following this procedure:

1. Rotate the hex switch to “0.”

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2. Toggle the navigation switch to the bank number “0.”  
Use the control LEDs to verify which bank you have selected, or use an available 6800+ software control option (serial/local or Ethernet/remote) to aid in confirming your bank selection.
3. Rotate the hex switch to the global recall parameter “F.”
4. Toggle the navigation switch to “On.”  
Use an available 6800+ software control option to aid in viewing, setting, and confirming the parameter value.

## Reading Software and Hardware Versions

The current software and hardware versions of the DMX6800+ AB/C Series modules can only be viewed using a software control application such as Pilot or +Pilot Lite. For more information, see your CCS Pilot User Manual or Online Help.

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# Setting DMX6800+ AB/C Series Control Parameters



## Note

The sequence of options listed in the **Parameter Option** column mirrors the sequence achieved when you move the navigation toggle switch *up*.

The following table lists all of the available control options and parameters for the DMX6800+ AB/C Series modules.

The On/Off combinations of the control LEDs on the card-edge indicate the active bank number. See “[Changing Parameter Settings](#)” on page 27 for more information.

## Legend

**Bold** option= Indicates that this is the default setting for the parameter

Superscript number <sup>(1)</sup>= Indicates that a footnote follows the table

“[RO]” means the parameters are read-only/feedback, and cannot be used to select controls

**Table 3-2.** DMX6800+ AB/C Series Card-Edge Parameter Options

Bank, Rotary Switch	Parameter	Function	Options
<b>Bank 0</b>			
0, 0	Bank Select	Selects a bank	<ul style="list-style-type: none"><li><b>Bank 0</b></li><li>Bank 1</li><li>Bank 2</li></ul>
0, 1	DARS In Status	Indicates the presence and lock status of DARS input signal (See <a href="#">Table 3-3 on page 35</a> )	
0, 2	Grp1_Err	Warns of a DBN, Chksum, Parity, or Buffer error in the group (See <a href="#">Table 3-3 on page 35</a> )	
0, 3	Grp2_Err	Warns of a DBN, Chksum, Parity, or Buffer error in the group (See <a href="#">Table 3-3 on page 35</a> )	
0, 4	Grp3_Err	Warns of a DBN, Chksum, Parity, or Buffer error in the group (See <a href="#">Table 3-3 on page 35</a> )	

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**Table 3-2. DMX6800+ AB/C Series Card-Edge Parameter Options(Continued)**

<b>Bank, Rotary Switch</b>	<b>Parameter</b>	<b>Function</b>	<b>Options</b>
0, 5	Grp4_Err	Warns of a DBN, Chksum, Parity, or Buffer error in the group (See Table 3-3 on page 35)	
0, 6	Grp1Ctrl	Controls the audio option when DeMuxed Group 1 is present with an error	<ul style="list-style-type: none"><li>• <b>Mute</b></li><li>• <b>Repeat</b></li></ul>
0, 7	Grp2Ctrl	Controls the audio option when DeMuxed Group 2 is present with an error	<ul style="list-style-type: none"><li>• <b>Mute</b></li><li>• <b>Repeat</b></li></ul>
0, 8	Grp3Ctrl	Controls the audio option when DeMuxed Group 3 is present with an error	<ul style="list-style-type: none"><li>• <b>Mute</b></li><li>• <b>Repeat</b></li></ul>
0, 9	Grp4Ctrl	Controls the audio option when DeMuxed Group 4 is present with an error	<ul style="list-style-type: none"><li>• <b>Mute</b></li><li>• <b>Repeat</b></li></ul>
0, A	DBN_Ctrl	Warns if the Data Block Number (DBN) is not increasing	<ul style="list-style-type: none"><li>• <b>Alert</b></li><li>• <b>Ignore</b></li></ul>
0, B	ALockMode	Defines the reference to which AES output are locked	<ul style="list-style-type: none"><li>• <b>None</b></li><li>• <b>DARS</b></li></ul>
0, C	FadeRate	Controls the rate of fading when channels are swapped or muted	0.0 to 10.0 sec ( <b>0.1 sec</b> )
0, D	DitherMode	Controls whether or not Audio dither mode is on	<ul style="list-style-type: none"><li>• <b>None</b></li><li>• <b>On</b></li></ul>
0, E	(Reserved for future use)		
0, F	Factory Preset	Recalls factory settings from memory	Recall

---

**Table 3-2. DMX6800+ AB/C Series Card-Edge Parameter Options(Continued)**

<b>Bank, Rotary Switch</b>	<b>Parameter</b>	<b>Function</b>	<b>Options</b>
<b>Bank 1</b>			
1, 0	Bank Select	Selects a bank	<ul style="list-style-type: none"><li>• <b>Bank 0</b></li><li>• Bank 1</li><li>• Bank 2</li></ul>
1, 1	ChSelect	Selects a de-multiplexed channel to control (See <a href="#">Table 3-3 on page 35</a> )	<ul style="list-style-type: none"><li>• <b>Ch01</b></li><li>• Ch02</li><li>• Ch03</li><li>• Ch04</li><li>• Ch05</li><li>• Ch06</li><li>• Ch07</li><li>• Ch08</li><li>• Ch09</li><li>• Ch10</li><li>• Ch11</li><li>• Ch12</li><li>• Ch13</li><li>• Ch14</li><li>• Ch15</li><li>• Ch16</li></ul>
1, 2 - 8 (Reserved for future use)			
1, 9	ChDelay	Adjusts the delay for the selected input channel	0.0 msec to 1320 msec <b>(0.0 msec)</b>
1, A	ChGain	Adjusts the gain for the selected input channel in 0.1 dB increments	-18.0 dB to 18.0 dB <b>(0.00 dB)</b>
1, B	ChInvert	Selects if there is invert control for the input channel	<ul style="list-style-type: none"><li>• <b>No</b></li><li>• Yes</li></ul>
1, C - F	(Reserved for future use)		

---

**Table 3-2. DMX6800+ AB/C Series Card-Edge Parameter Options(Continued)**

<b>Bank, Rotary Switch</b>	<b>Parameter</b>	<b>Function</b>	<b>Options</b>
<b>Bank 2</b>			
2, 0	Bank Select	Selects the bank	<ul style="list-style-type: none"><li>• <b>Bank 0</b></li><li>• Bank 1</li><li>• Bank 2</li></ul>
2, 1	OutChSel	Selects an Analog or AES output channel to control	<ul style="list-style-type: none"><li>• <b>Ch1A</b></li><li>• Ch1B</li><li>• Ch2A</li><li>• Ch2B</li><li>• AES1a</li><li>• AES1b</li><li>• AES2a</li><li>• AES2b</li></ul>
2, 2 - 7	(Reserved for future use)		

---

**Table 3-2. DMX6800+ AB/C Series Card-Edge Parameter Options(Continued)**

<b>Bank, Rotary Switch</b>	<b>Parameter</b>	<b>Function</b>	<b>Options</b>
2, 8	OutSrc	Selects the source for the Analog or AES output selected (See <a href="#">Table 3-3 on page 35</a> )	<ul style="list-style-type: none"><li>• Ch01(<b>Ch1A/AES1a</b>)</li><li>• Ch02(<b>Ch1B/AES1b</b>)</li><li>• Ch03(<b>Ch2A/AES2a</b>)</li><li>• Ch04(<b>Ch2B/AES2b</b>)</li><li>• Ch05</li><li>• Ch06</li><li>• Ch07</li><li>• Ch08</li><li>• Ch09</li><li>• Ch10</li><li>• Ch11</li><li>• Ch12</li><li>• Ch13</li><li>• Ch14</li><li>• Ch15</li><li>• Ch16</li><li>• Pair1 Sum</li><li>• Pair2 Sum</li><li>• Pair3 Sum</li><li>• Pair4 Sum</li><li>• Pair5 Sum</li><li>• Pair6 Sum</li><li>• Pair7 Sum</li><li>• Pair8 Sum</li></ul>
2, 9	OutSrcFb	Returns the feedback of the <b>OutSrc</b> parameter setting. (See <a href="#">Table 3-3 on page 35</a> )	
2, A	OutMute	Selects whether or not there is mute control for the selected AES output	<ul style="list-style-type: none"><li>• <b>No</b></li><li>• Yes</li></ul>

---

**Table 3-2. DMX6800+ AB/C Series Card-Edge Parameter Options(Continued)**

<b>Bank, Rotary Switch</b>	<b>Parameter</b>	<b>Function</b>	<b>Options</b>
2, B	OutDR	Number of quantizing bits (wordlength) on selected AES output	<ul style="list-style-type: none"><li>• 16-bit</li><li>• <b>20-bit</b></li><li>• 24-bit</li></ul>
2, C	OP Level Offset	Applies attenuation to analog audio output levels (See “ <a href="#">Using the Analog Audio Output Level Offset</a> ” on page 26)	-5.0 to <b>0.0</b> dB (steps of 0.5 dB)
2, D - F	(Reserved for future use)		

\* If one of the summing channels contains Non-PCM data (for example, Compressed Audio), the summing is disabled. For channels Ch1A, Ch2A, AES1a, and AES2a the lower channel of the selected pair will be output. For the other output channels, the upper channel of the selected pair will be output.

## LED Indicators

At switch positions other than those listed below, the four LEDs are used to indicate the audio group presence. LED 1 represents group 1, LED 2 represents group 2, and so on.

**Table 3-3. LED Indicators**

Function	LED			
	LED 1	LED 2	LED 3	LED 4
<b>Bank 0 Hex Switch Position 1</b>				
DARS In Status	Present	Locked		
<b>Bank 0 Hex Switch Positions 2-5</b>				
Group errors	DBN error	Chksum error	Parity error	Buffer error
<b>Bank 1 Hex Switch Position 1 and Bank 2 Hex Switch Position 9</b>				
Ch1	Off	Off	Off	Off
Ch2	On	Off	Off	Off
Ch3	Off	On	Off	Off
Ch4	On	On	Off	Off
Ch5	Off	Off	On	Off
Ch6	On	Off	On	Off
Ch7	Off	On	On	Off
Ch8	On	On	On	Off
Ch9	Off	Off	Off	On
Ch10	On	Off	Off	On
Ch11	Off	On	Off	On
Ch12	On	On	Off	On
Ch13	Off	Off	On	On
Ch14	On	Off	On	On
Ch15	Off	On	On	On
Ch16	On	On	On	On
Pair1 Sum	Flashing	Off	Off	Off
Pair2 Sum	Off	Flashing	Off	Off

---

**Table 3-3. LED Indicators (Continued)**

<b>LED</b>				
Pair3 Sum	Flashing	Flashing	Off	Off
Pair4 Sum	Off	Off	Flashing	Off
Pair5 Sum	Flashing	Off	Flashing	Off
Pair6 Sum	Off	Flashing	Flashing	Off
Pair7 Sum	Flashing	Flashing	Flashing	Off
Pair8 Sum	Off	Off	Off	Flashing

# Cross-Functional Parameter Changes



## Note

You can only view these forced settings if you select the affected channel. For example, if the condition affects Channel 1 (Ch01), to view the forced settings, you must select **ChSelect>Ch01**.

When certain conditions occur, a change is forced in associated parameters. The following table describes some conditions which result in forced settings for two parameter options of any affected audio channel in the DMX6800+ AB/C Series. More than one audio channel at a time could be affected by the conditions.

**Table 3-4.** Cross-functional Parameter Changes

Conditions	Forced Settings	Disabled Parameters
For any demultiplexed audio channel(s): <ul style="list-style-type: none"><li>• Audio indicator C-bit set to non-audio</li><li>• V-bit set to data is invalid, or valid compressed audio</li></ul>	Forced in the affected channel(s) only: <ul style="list-style-type: none"><li>• ChGain=0 dB</li><li>• ChInvert=No</li></ul>	Disabled for the affected channel(s) only: <ul style="list-style-type: none"><li>• <b>ChGain</b></li><li>• <b>ChInvert</b></li></ul>

# LEDs and Alarms

## Monitoring LEDs

The DMX6800+ AB/C Series of Audio Demultiplexer modules have nine monitoring LEDs that serve as a quick monitoring reference.

Figure 3-1 shows the general location of the monitoring LEDs on a generic 6800+ module. Table 3-5 describes each LED in more detail.

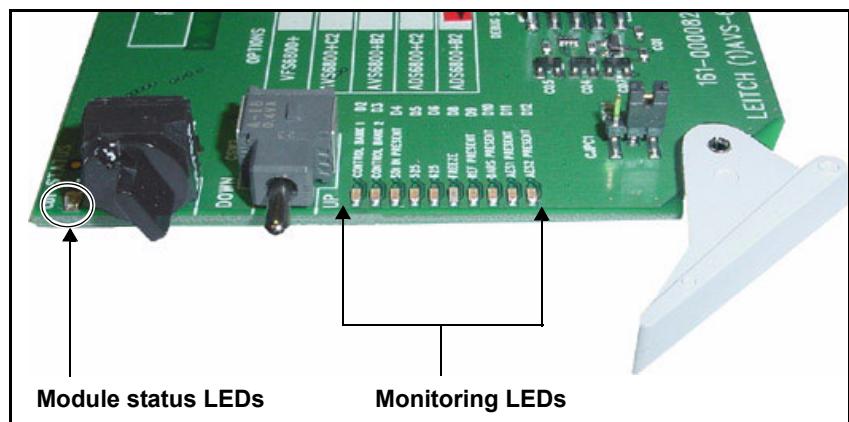


Figure 3-1. Location of DMX6800+ AB/C Series LEDs

Table 3-5. Card-Edge Monitoring LEDs

LED	Name	Description
CD1	Module Status	Indicates the module's current operational status using a bi-colored LED <ul style="list-style-type: none"><li>Green: FPGAs configured and module operating properly</li><li>Red: FPGAs not configured, or module is not functioning</li></ul>
D1	Bank Mark 0	Indicates the selected parameter bank
D2	Bank Mark 1	
D3	Status LED1	General purpose LED
D4	Status LED2	General purpose LED
D5	Status LED3	General purpose LED

---

**Table 3-5.** Card-Edge Monitoring LEDs (*Continued*)

LED	Name	Description
D6	Status LED4	General purpose LED
D7	Status LED5	SDI 525 Standard Indicator
D8	Status LED6	SDI 625 Standard Indicator

## Module Status LEDs

The DMX6800+ AB/C Series module does not have any card-edge alarms. Instead, module status LEDs on the corner of the module light up if an error is detected. See [Figure 3-1](#) for the location of these LEDs, and [Table 3-6](#) for a definition of the LED colors.

Alarms are usually logged and monitored within the available 6800+ software control applications (for example, +Pilot Lite or Pilot). See the appropriate software control user manual or online help for more information.

**Table 3-6.** Status LED Descriptions

LED Color Sequence	Meaning
Off	There is no power to the module; the module is not operational.
Green	There is power to the module; the module is operating properly.
Red	There is an alarm condition.
Flashing red	The module has detected a hardware/firmware fault.
Amber	The module is undergoing configuration.

---

### Note

If the LED is flashing red, please contact your Leitch Customer Service Representative.

---

## Alarms

**Table 3-7** describes the specific alarms for the DMX6800+ AB/C Series modules. You can only identify specific alarms using a software control application.

**Table 3-7.** Alarm Definitions

Alarm Name	Alarm Description	Alarm Level
Loss of SDI	SDI video input is missing	Major
Group 1–4 Error Status	An error has occurred in the group 1–4 de-embedder	Major
Loss of DARS	DARS reference input is missing	Minor
Loss of DARS Lock	DARS reference input is not locked to the video input	Minor

Chapter 4

## Specifications

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## Overview

This section describes the following specifications for the DMX6800+ AB/C Series of Audio Demultiplexer modules:

- [“Serial Digital Video Input” on page 42](#)
- [“Serial Digital Video Output” on page 42](#)
- [“Unbalanced AES Output” on page 43](#)
- [“Balanced AES Output” on page 43](#)
- [“Analog Audio Output” on page 44](#)
- [“Performance” on page 45](#)

Specifications and designs are subject to change without notice.

---

# Serial Digital Video Input

**Table 4-1.** Serial Digital Video Input Specifications

Item	Description
Standards	SMPTE 259M-C; 270 Mbps, 525/625 component
Quantization	10-bit
Connector	BNC (IEC169-8)
Impedance	$75\Omega$
Return loss	18 dB to 270 MHz
Cable equalization	230 m (754.59 ft) of Belden 8281

# Serial Digital Video Output

**Table 4-2.** Serial Digital Video Output Specifications

Item	Description
Standards	SMPTE 259M-C; 270 Mbps, 525/625 component
Quantization	10-bit
Connector	BNC (IEC169-8)
Impedance	$75\Omega$
Return loss	18 dB to 270 MHz
Signal level	$800 \text{ mV} \pm 10\%$
DC offset	$0 \text{ V} \pm 0.5 \text{ V}$
Rise and fall time	400 to 1500 ps (20% to 80% amplitude)
Overshoot	<10% of amplitude
Jitter	<0.2 UI (740 ps) peak to peak

---

# Unbalanced AES Output

**Table 4-3.** Unbalanced AES Output Specifications

Item	Description
Standard	AES3-1992
Connector	BNC (IEC169-8)
Output level	1.0 V $\pm$ 10% (peak to peak)
DC offset	0.0 V $\pm$ 50.0 mV
Rise/fall time	30 to 44 ns (10% to 90%)
Impedance	75 $\Omega$
Return loss	>25 dB, 0.1 to 6.0 MHz

# Balanced AES Output

**Table 4-4.** Balanced AES Output Specifications

Item	Description
Standard	AES3-1992
Connector	3-pin connector (male)
Output level	2.0 V to 7.0 V (peak to peak)
Jitter	$\pm$ 20 ns
Rise/fall time	5 to 30 ns (10% to 90%)
Impedance	110 $\Omega$ $\pm$ 20% (0.1 to 6 MHz)
Common mode component	>30 dB below output signal (0 to 6 MHz)

---

# Analog Audio Output

**Table 4-5.** Analog Audio Output Specifications

Item	Description
Connector	3-pin connector (male)
Type	Electronic, Balanced
Output level setting range	<ul style="list-style-type: none"><li>• DMX6800+ A4B2 and DMX6800+ A4C2 +16 dBu to +28 dBu using jumper settings and an addition -5.0 dB using the <b>OP Level Offset</b> parameter DMX6800+ A4B2 and DMX6800+ A4C2 option)</li><li>• DMX6800+ A4B2Z and DMX6800+ A4C2Z +10 dBm to +22 dBm using jumper settings and an addition -5.0 dB using the <b>OP Level Offset</b> parameter</li></ul>
Maximum output level	0 dBFS = +28 dBu 0 dBFS = +22 dBm
Output impedance	<ul style="list-style-type: none"><li>• <math>66\Omega</math> (DMX6800+ A4B2 and DMX6800+ A4C2 option)</li><li>• <math>600\Omega</math> (DMX6800+ A4B2Z, and DMX6800+ A4C2Z option)</li></ul>
THD+N	>85 dB @ 1 kHz, -1 dBFS = +23 dBu or -1 dBFS = +17 dBm ( $600\Omega$ )
Cross talk	>95 dB, 20 Hz to 20 kHz
Frequency response	$\leq \pm 0.04\text{dB}$ @ 0 dBFS, 20 Hz to 20 kHz
SNR	>100 dB @ 0 dBFS
Linearity	$\leq \pm 0.3\text{ dB}$ up to -100 dBFS

---

# Performance

**Table 4-6.** Performance Specifications

<b>Item</b>	<b>Specification</b>
Power consumption	10.5 W
Operating temperature	5° to 45° C



Appendix A

## Manipulating Audio Bits

---

### Overview

The following tables contain information on the manipulation of bits that occur when using the DMX6800+ AB/C Series of Audio Demultiplexer modules. The receiver classification is B3; the transmitter classification is Video SDI Embedder.

**RX Key:** N = not recognized, Y = recognized, S = recognized and stored or passed through or both

**TX Key:** N = not transmitted, Y = transmitted

# Manipulating Channel Status Bits

Table A-1. C-Bit Manipulation

Byte	Bit	Function	RX	TX	Remarks
0	0	[0] Consumer Use [1] Professional Use	N N	Y Y	Passed unmodified
0	1	[0] Audio [1] Non-Audio	Y Y	Y Y	Passed unmodified
0	2 to 4	[000] Not Indicated [100] No Emphasis [110] 50/15 µs [111] CCITT J.17	N N N N	Y Y Y Y	Passed unmodified
0	5	[0] Locked [1] Unlocked	N N	Y Y	Passed unmodified
0	6 to 7	[00] Not indicated [01] 48 kHz [10] 44.1 kHz [11] 32 kHz	N N N N	Y Y Y Y	Passed unmodified
1	0 to 3	[0000] Not indicated [0001] Two channel [0010] Mono [0011] Prim/sec [0100] Stereo [0101] to [1111] Undefined	N N N N N N	Y Y Y Y Y Y	Passed unmodified
1	4 to 7	[0000] Not indicated [0001] 192-bit block [0010] AES18 (HDLC) [0011] User defined [0100] to [1111] Undefined	N N N N N	Y Y Y Y Y	Passed unmodified
2	0 to 2	[000] Not Indicated [001] Audio data [010] Co-ordination signal [011] to [111] Undefined	N N N N	Y Y N N	Set to [001] if 24 bits; otherwise, set to [000]

---

**Table A-1. C-Bit Manipulation (Continued)**

<b>Byte</b>	<b>Bit</b>	<b>Function</b>	<b>RX</b>	<b>TX</b>	<b>Remarks</b>
2	3 to 5	[000] Not indicated [001] Max Length - 1 [010] Max Length - 2 [011] Max Length - 3 [100] Max Length - 4 [101] Max Length [110] to [111] Undefined	N N N N N N N	N N N N Y Y N	Set to [100] if 16 bits; otherwise, set to [101]
2	6 to 7	Reserved	N	Y	Passed unmodified
3	0 to 7	Reserved	N	Y	Passed unmodified
4	0 to 1	[00] Not a reference [01] Grade 1 reference [10] Grade 2 reference [11] Undefined	N N N N	Y Y Y Y	Passed unmodified
4	2 to 7	Reserved	N	Y	Passed unmodified
5	0 to 7	Reserved	N	Y	Passed unmodified
6 to 9	0 to 7	Alphanumeric channel origin data	N	Y	Passed unmodified
10 to 13	0 to 7	Alphanumeric channel destination data	N	Y	Passed unmodified
14 to 17	0 to 7	Local sample address code	N	Y	Passed unmodified
18 to 21	0 to 7	Time-of-day sample address code	N	Y	Passed unmodified
22	0 to 3	Reserved	N	Y	Passed unmodified
22	4	Bytes 0 to 5 reliability flag	N	Y	Passed unmodified
22	5	Bytes 6 to 13 reliability flag	N	Y	Passed unmodified
22	6	Bytes 14 to 17 reliability flag	N	Y	Passed unmodified
22	7	Bytes 18 to 21 reliability flag	N	Y	Passed unmodified
23	0 to 7	CRC	Y	Y	Calculated on output

---

# Manipulating Validity and User Bits

**Table A-2.** V-Bit and U-Bit Manipulation Details

Bit Manipulation	Function	Remarks
Validity (V) bit	[0] Valid [1] Invalid	Passed unmodified
User (U) bit		Passed unmodified

## Appendix B

# Communication and Control Troubleshooting Tips

---

## Overview

Find the following troubleshooting information in this appendix:

- [“General Troubleshooting Steps” on page 52](#)
- [“Software Communication and Control Issues” on page 53](#)
- [“Hardware Communication and Control Issues” on page 57](#)
- [“Contacting Customer Service” on page 57](#)

# General Troubleshooting Steps

Follow these steps in troubleshooting 6800+ product problems:

1. Review the “[Software Communication and Control Issues](#)” on [page 53](#) outlined in this chapter.
2. Search this product manual and other associated documentation for answers to your question.  
Product documentation (including manuals, online help, application notes, erratas, product release notes, and more) can be found on our Web site at [www.broadcast.harris.com/leitch](http://www.broadcast.harris.com/leitch) (Support section), along with technical support information, training information, product downloads, and the product knowledge base.
3. Contact your product Customer Service representative if, after following these initial steps, you cannot resolve the issue.  
To contact your product Customer Service, see “[Contacting Customer Service](#)” on [page 57](#).

---

## Note

Associated documentation for 6800+ series products can generally be found in the product-specific manual that accompanies every module, in the *FR6802+ Frame Installation and Operation Manual*, and in the *6800+ Safety Instructions and Standards Manual*.

---

# Software Communication and Control Issues

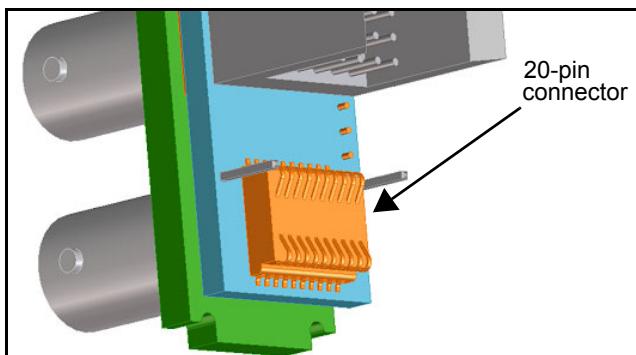
- “+ Pilot Lite Fails to Communicate with Installed Modules” on page 53
- “+ Pilot Lite Does Not Find All Modules in Frame” on page 54
- “+ Pilot Lite or CCS Software Application Not Responding” on page 55
- “+ Pilot Lite Cannot Control a Module Showing in the Control Window” on page 55
- “+ Pilot Lite Status Bar Reports ‘Not Ready’” on page 55
- “CCS Software Application or Remote Control Panel Does Not Communicate with Module” on page 56
- “Alarm Query Fails When a Device Reboots” on page 56

## + Pilot Lite Fails to Communicate with Installed Modules

Confirm that the following items are not the reason for the communication failure:

- Proper module slot has not been specified (+ Pilot Lite is not communicating with the appropriate slot). See your *FR6802+ Frame Installation and Operation Manual* for more information on slot identification.
- COM port is used elsewhere (Check that the correct COM port is configured in + Pilot Lite and that another application is not using that COM port).
- Actual frame ID does not match with the two DIP switch settings in the back of the frame (+ Pilot Lite is not communicating with the proper frame). See your *FR6802+ Frame Installation and Operation Manual* for more information on frame ID switch settings.
- Null modem cable is not being used. Between the PC running + Pilot Lite and the FR6802+ frame, there should be a null RS-232 modem cable. At minimum, this requires that pins 2 and 3 are crossed and 5 to 5 for ground.
- ICE6800+ module is installed in the frame (+ Pilot Lite control is disabled if an ICE6800+ module is installed in the frame; ICE6800+ modules are used for CCS control).

- A legacy 6800 series product is in the frame. **+** Pilot Lite cannot communicate with legacy 6800 series products. They will not be discovered or controlled by **+** Pilot Lite, although they can be installed in the FR6802<sup>+</sup> frame and work using card edge controls. The module must be from the 6800<sup>+</sup> product family.
- Check that the back module does not have any bent pins. Follow this procedure:
  - a. Unplug the front module first
  - b. Unscrew and remove the back module.
  - c. View the 30-pin spring connector at the bottom of the back module. See [Figure B-1](#).



**Figure B-1.** Connector on 6800<sup>+</sup> Back Module

This connector should not have any bent or pressed pins. Even a slightly depressed or bent pin may cause genlock issues.

- d. If there are bent pins, carefully re-position them to their correct positions.  
If this is not possible, a back module can be obtained from the manufacturer.

## **+** Pilot Lite Does Not Find All Modules in Frame

If a discovery is started too soon after frame power-up, **+** Pilot Lite will not find all the installed modules. Refresh **+** Pilot Lite ([File](#) > [Refresh](#)), and ensure that installed modules are fully powered-up first before discovery.

If a module is plugged into the frame after a discovery, + Pilot Lite does not automatically detect the module. Refresh + Pilot Lite (**File > Refresh**) to discover the newly installed module.

If a Legacy 6800 series product is in the frame, + Pilot Lite will not detect it. + Pilot Lite cannot communicate with legacy 6800 series products. They will not be discovered or controlled by + Pilot Lite although they can be installed in the FR6802+ frame and work using card edge controls. For + Pilot Lite to find a module, it must be from the 6800+ product family.

## **+ Pilot Lite or CCS Software Application Not Responding**

+ Pilot Lite and CCS applications such as Navigator or Pilot cannot run on the same PC at the same time. Both applications can be installed, but only one can be opened at a time.

## **+ Pilot Lite Cannot Control a Module Showing in the Control Window**

Consider these questions:

- Did you physically set the jumper for local control? If so, set this jumper to the REM position for remote control.
- Does the card name in the control window physically match the card type in the frame?
- Is the module properly seated in the frame? Check the positioning of the module in its slot in the frame.
- Does the Control window indicate the device is “ready”? The device may be powered off or disconnected from the network.

## **+ Pilot Lite Status Bar Reports ‘Not Ready’**

+ Pilot Lite reports each device’s connection status in the status bar. If the connection status message reads “Not Ready,” check the following:

- Is the module properly seated in the frame? Check the position of the module in the frame.
- Is the frame connected to the network? Check the device’s network connection.

If the status bar still reports no status or “Not Ready” for the frame or device, try restarting + Pilot Lite.

## CCS Software Application or Remote Control Panel Does Not Communicate with Module

CCS software applications (such as Pilot, CoPilot, and Navigator) and remote control panels require the purchase and installation of an ICE6800+ module in an FR6802+ frame in order to communicate remotely via Ethernet.

## Alarm Query Fails When a Device Reboots

When you reboot a device connected to your PC, the alarm traffic hitting the network may cause an alarm query request to time out and fail. While the query does not automatically retry, it will post an “Alarm query failed” message to the **Diagnostics** window.

To clear an “Alarm query failed” message, right-click inside the **Diagnostics** window, and then select **Refresh** from the resulting context menu.

# Hardware Communication and Control Issues

- “Frames Fail to Communicate with the PC after a Power Failure” on page 57
- “Module Does Not Seem to Work” on page 57

## Frames Fail to Communicate with the PC after a Power Failure

Have you exited the software and restarted since the frame recovered from its power failure? To restore communications between the PC and the frames, ensure that the frames have three or more minutes to recover from the power failure before you exit the application and restart the PC.

## Module Does Not Seem to Work

Although the following troubleshooting tips may seem obvious, please take the time to ensure the following:

- All appropriate rear connections are securely made
- The board is securely installed (with no bent pins)
- The frame is turned on

## Contacting Customer Service

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